

**Translation**

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PATENT COOPERATION TREATY

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference YCT-871	<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416	
International application No. PCT/JP2003/012662	International filing date (day/month/year) 02 October 2003 (02.10.2003)	Priority date (day/month/year) 02 October 2002 (02.10.2002)
International Patent Classification (IPC) or national classification and IPC C07D 499/04, C07B 63/00, B01D 9/02		
Applicant NIPPON SODA CO., LTD.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. ☐ (sent to the applicant and to the International Bureau) a total of \_\_\_\_\_ sheets, as follows:

☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

<input checked="" type="checkbox"/> Box No. I	Basis of the report
<input type="checkbox"/> Box No. II	Priority
<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/> Box No. VI	Certain documents cited
<input type="checkbox"/> Box No. VII	Certain defects in the international application
<input type="checkbox"/> Box No. VIII	Certain observations on the international application

Date of submission of the demand 15 April 2004 (15.04.2004)	Date of completion of this report 06 December 2004 (06.12.2004)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2003/012662

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☒ The international application as originally filed/furnished
- ☐ the description:
- pages \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the claims:
- pages \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_, as amended (together with any statement) under Article 19
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:
- pages \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/JP 03/12662

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	2-5, 8-10	YES
	Claims	1, 6, 7	NO
Inventive step (IS)	Claims		YES
	Claims	1-10	NO
Industrial applicability (IA)	Claims	1-10	YES
	Claims		NO

## 2. Citations and explanations

Document 1: WO 92/03444 A1

Document 2: JP 5-301882 A

Document 2 discloses a method for producing organic compounds, which comprises a dehydration step for decreasing the water concentration to a prescribed level or lower, wherein azeotropic dehydration is conducted while adding a solvent that contains chloroform, and discloses a feature wherein the azeotropic dehydration is conducted continuously and efficiently by adding appropriate amounts of an alcohol with a carbon number between 1 and 4 and a non-polar solvent (preferably chloroform, dichloromethane or carbon tetrachloride) in relation to the amount of solvent that is distilled out.

Consequently, the invention pertaining to a method for producing organic compounds that is set forth in claim 1 lacks novelty and does not involve an inventive step in the light of the disclosures of document 2.

In addition, document 2 also discloses the feature of dissolving the compound that is obtained by means of azeotropic dehydration in alcohol, adding a non-polar solvent (chloroform, dichloromethane or carbon tetrachloride are used in the examples) thereto, and then crystallizing.

Consequently, the inventions pertaining to a method for producing organic compounds that are set forth in claims 6 and 7 lack novelty and do not involve an inventive step in the light of the disclosures of document 2.

Meanwhile, document 1 discloses a method for producing (5-Methyl-2-oxo-1, 3-dioxolen-4-yl) methyl (5R, 6S)-6-[(R)-1-hydroxyethyl]-2-(3-tetrahydrofuryl) methylpenem-3-carboxylate from (5R, 6S)-6-[(R)-1-hydroxyethyl]-2-(3-tetrahydrofuryl) methylpenem-3-carboxylate and 4-iodomethyl-5-methyl-2-oxo-1, 3-dioxolene; therefore, in the light of the well-known technical issue of obtaining an end product that has a low water content, a person skilled in the art could select the solvent and the like that are used in the production method disclosed in document 1 pursuant to the method that is disclosed in document 2 so as to accommodate the characteristics of the starting materials and of the end product, as appropriate. Furthermore, there is not considered to be any significant effect that results from such a configuration.

Consequently, the methods for producing organic compounds that are set forth in claims 2 to 5 and 8 to 10 do not involve an inventive step.